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Real-time Image Compression for Lagrangian Particle Tracking

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Optical particle tracking is a powerful tool for fluid measurements; however it faces serious constraints due to the huge data rates produced by high-speed cameras with high spatial resolution. Since particle tracking typically produces images that contain simple spots on a uniform background, these images are prime candidates for real-time image compression. We have implemented a system that uses a programmable logic unit to achieve real-time image compression factors ranging from 100 to 1000 for 1024 x 1280 pixel images at 500Hz. We present details of our existing implementation and discuss future developments in this field.

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